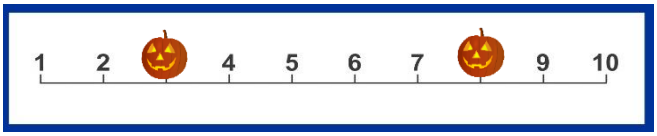
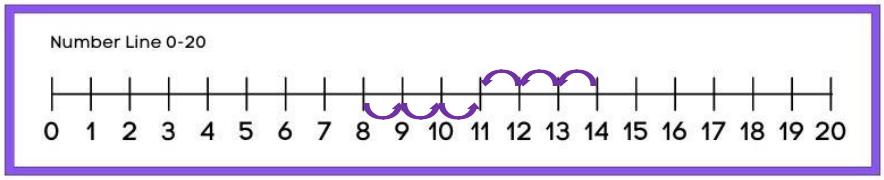
First Name: _____ **Last Name:** _____ **Grade:** _____

Teacher: _____ **Parent's email:** _____

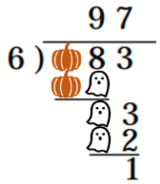
Numbers and Digits

Kinder & First Grade: solve <u>at least</u> 3 problems.
Second & Third Grade: solve <u>at least</u> 7 problems.
Fourth Grade and above: solve <u>at least</u> 12 problems.

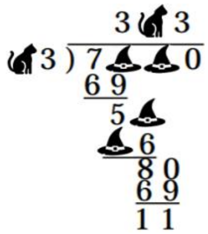
		Answer
1.		*3 and 8*
2.	123456789101112131415	*2*
3.	 2+5+9 = 16	*16*
4.	 The number 8, 9, 10, 11, 12, 13, 14 are between 7 and 15. The number 11 is exactly in the middle.	*11*
5.	3 6 6 663 – 366 = 297	*297*
6.	a. 97+86 or 86+97 or 96+87 or 87+96= **183** b. 14+23 or 23+14 or 13+24 or 24+13 = **37**	*a. 183* *b. 37*
7.	Her list: 557, 575, 577, 755, 757, 775. The largest number is 775; the smallest number is 557. So, 775 – 557 = **218**	*218*
8.	Use deductive reasoning. Read the clues several times to deduct the answer **8783**.	*8783*
9.	To get the greatest possible difference, we need to subtract the smallest number from the greatest number. Use the three greatest digits in the minuend and arrange them from greatest to least. Arrange the other three digits from least to greatest in the subtrahend. Then you will find 531 is the greatest possible difference. 654 – 123 = **531**.	*531*

10

a.



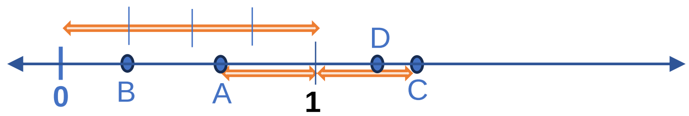
b.



In the first division, we multiply 97 b to find . 97×6 = 582, so **= 5**.
58÷6 = 9r4 → **= 4** because 9×6 =54.

In the second division, we find by dividing 69 by 3 = 23. So, **= 2**.
23×323+11 = 7440.
Therefore, **= 4**.

11.



B = 0.25 (because it is halfway between 0 and 0.5)
Since A + B = 0.80, A = 0.80 – 0.25 = 0.55. C = 1 + (1 – 0.55) = 1.45
D is placed somewhere between 1 and C since 1 < D < C. **The order is B, A, D, C.**

B, A, D, C or BADC

12.

__ __ __ On the first place there could be any of the digits 2, 5, 7, or 9. On the second place any of the three digits that are left. On the units' place any of the two digits that are left. Find the combination 4x3x2 = 24 possible area codes.
Or do the organized list.

975, 957, 972, 927, 952, 925
795, 759, 792, 729, 752, 725
597, 579, 592, 529, 572, 527
297, 279, 295, 259, 275, 257

There are **24 possible area codes**.

24

13.

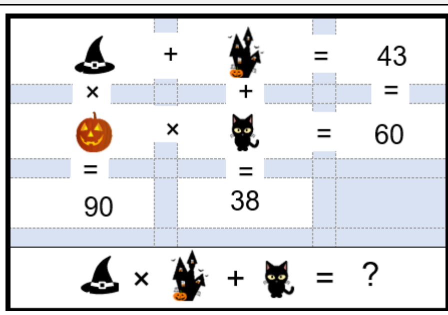
One way to solve: NM8 – NM = 386, so we know M must be 2. Since N28 – N2 = 386, we find N must be 4. Therefore, 428 – **42** = 386.
The other way to approach it is to do column subtraction:

```
  NM8
- 386
   NM
```

M is 2, N = 12 – 8 = 4. 428 – 386 = **42**

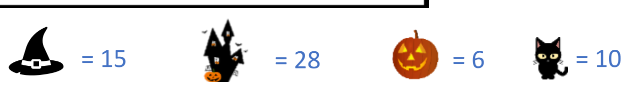
42

14.



60 = 1x60 or 2x30 or 3x20 or 4x15 or 5x12 or 6x10. So, the possible value for the pumpkin can be 1, 2, 3, 4, 5, or 6. Do try and error and check for the clues. Only 6 will work for the pumpkin.

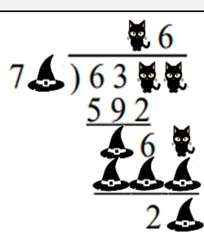
15	+	**28**	=	43
x		+		=
6	x	**10**	=	60
=		=		
90		38		



15×28 + 10 = **430**

430

15.



63_ _÷7 = _6, could be 9 or 8.

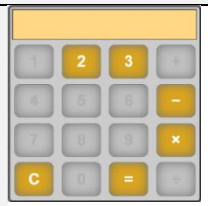
If = 9, then 6399÷96 = 66 R 63, so it doesn't work.
If = 8, then 6388÷86 = 74 R 24, it works. Thus, **= 8**, **= 4**.

= 8; = 4

16.	The product of two consecutive digits must create a two-digit number, thus on the hundreds and tens place we can't have 1 and 2 or 2 and 3. If we have 4 and 5 in hundreds and tens place, then the ten-thousands and thousands is 4x5=20. Then we have 20,459 to have the sum of 20 of all the digits. It is less than 30,000. If we have 5 and 6 on hundreds and tens place, then we'll get 30,566, but this number is even. If we have 6 and 7 on hundreds and tens place, then we'll get 42,671 it works with all the clues. If we have 7 and 8 on hundreds and tens place, then we'll get 56,78_ the sum of four digits is more than 20, the same will happen for 72,89_. The only number that works with the clues is **42,671**.	*42,671*

17.	**One way:** We can look at the ones and tens digits separately: The ones digit of 8 from 1 through 384: since it occurs one time in every set of 10 consecutive numbers, there are 38 complete sets of 10 consecutive numbers. So, **the digit '8' appears 38 times as a ones digit.** The tens digits of 8 from 1 through 384: since it occurs 10 times in every set of 100 consecutive numbers, there are 3 complete sets of 100 (1-100, 101-199, 200-299). **The digit 8 appears 30 times as a tens digit.** In addition, **the numbers 380-384 contain 5 more tens digit of 8**. In all, the digit '8 appears a total of **38 + 30 + 5 = 73 times**. **Another way:** If we are looking at the first one hundred numbers (1-100) the digit 8 appears 20 times: 8, 18, 28, 38, 48, 58, 68, 78, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 98. Since we have 384 pages, it means 20×3 + 13 = **73 times** digit 8 will appear in the page number 1-384.	*73 [times]*

18.



1 =	3 – 2	**11 =**	22 – 3×3 – 2
2 =	2	**12 =**	2×2×3 or 2×3×2 or 3×2×2
3 =	3	**13 =**	22 – 3 – 3×2
4 =	2×2	**14 =**	2×2×2×2 – 2
5 =	33−22−3−3 or 3×3−2×2	**15 =**	22 – 3 – 2 – 2
6 =	2×3 or 3×2	**16 =**	2×2×2×2
7 =	3×3 – 2	**17 =**	22 – 3 – 2
8 =	2×2×2	**18 =**	3×3×2 or 3×2×3
9 =	3×3	**19 =**	22 – 3
10 =	2×2×3 – 2	**20 =**	22 – 2

1 =	3 – 2
2 =	2
3 =	3
4 =	2×2
5 =	33 – 22 – 3 – 3 or 3×3 – 2×2
6 =	2×3 or 3×2
7 =	3×3 – 2
8 =	2×2×2
9 =	3×3
10 =	2×2×3 – 2

11 =	22 – 3×3 – 2
12 =	2×2×3 or 2×3×2 or 3×2×2
13 =	22 – 3 – 3×2
14 =	2×2×2×2 – 2
15 =	22 – 3 – 2 – 2
16 =	2×2×2×2
17 =	22 – 3 – 2
18 =	3×3×2 or 3×2×3
19 =	22 – 3
20 =	22 – 2